MASS GIS Data Viewer

Viewer Basics: User Guide

Using Theme Tables and Querying the Data — *Exercise #4*

In this Exercise:

- Reviewing the Identification Tool
- Exploring a Theme's Database (Attribute Table)
- Querying a Theme's Database
- Practicing Querying (Challenge #1)
- Practicing Querying (Challenge #2)
- Deeper Into Querying

In this exercise, we will use Ashburnham in all diagrams. You use your own town.

1. Reviewing the Identification Tool

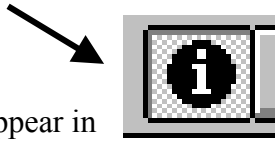
a) Before beginning this exercise, be sure you have the following themes in the View's Table of Contents, and that the themes are turned on.

MA Towns
Openspace Restrictions (transparent)
Openspace by Ownership (transparent)

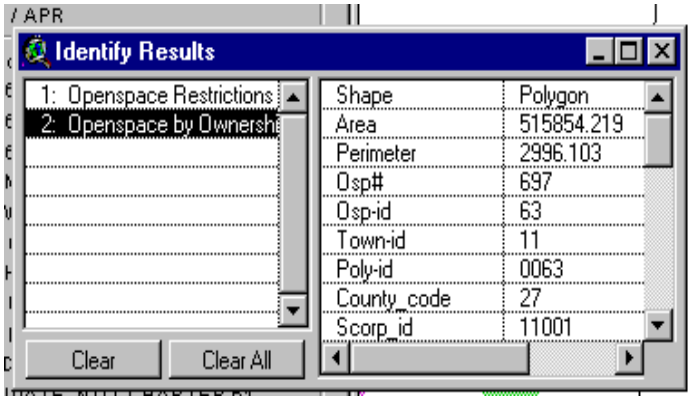
b) Be sure your View is set to the extent **MA Towns**, and that **your town** has been selected. Your town is showing in the center of the View.

c) Make the "**Open Space Restrictions**" and the "**Openspace by Ownership**" themes **active**. **Hint**: To activate two or more themes at once, hold down the shift key as you click in the theme areas.

d) In the Tool bar select the "**Identification Tool**". Bring the "**Identification Tool**" into the View window. Click on any of the Openspace parcels.



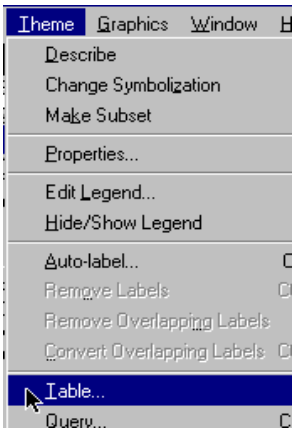
e) A data record window "**Identify Results**" of the parcel selected will appear in your View.

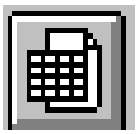


Note: Because you activated two themes when you selected the "Identification Tool", the "Identify Results Window" lists the parcel twice and shows the information for each theme. You have a choice of selecting either record line and reading information about the "Openspace Ownership" theme or the "Openspace Restrictions" theme.

2. Exploring a Theme's Database (Attribute Table)

a) With only the theme "**Openspace by Ownership**" **active**, go to the **Theme menu** and select "**Table**" or select the "**Open Theme Table**" button.





Note: The Theme's Database (Attribute Table) contains information about the theme. The information is divided into different fields. These fields are the "attributes" of the theme.

b) Examine the Table structure "**Attributes of Openspace by Ownership**". The **fields** are listed across the top of the table and the rows, listed vertically, are called **records**.

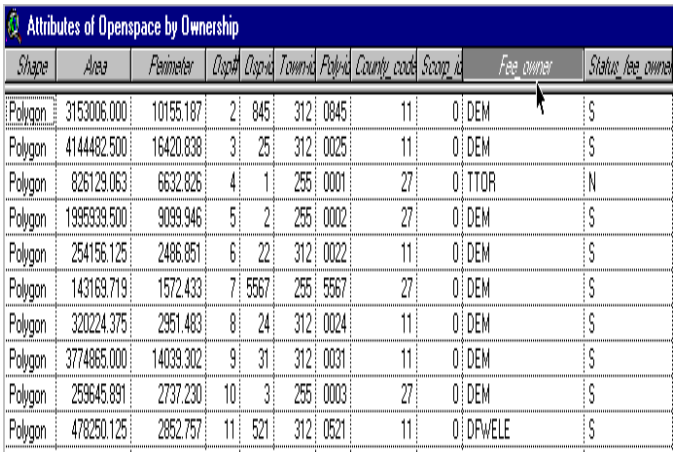
Fields

Records

Attributes of Openspace by Ownership

Shape	Area	Perimeter	Osp#	Osp-id	Town-id	Poly-id	County_code	Scorp_id	Fee_owner	Status_fee_owner
Polygon	3153006.000	10155.187	2	845	312	0845	11	0	DEM	S
Polygon	4144482.500	16420.838	3	25	312	0025	11	0	DEM	S
Polygon	826129.063	6632.826	4	1	255	0001	27	0	TTOR	N
Polygon	1995939.500	9099.946	5	2	255	0002	27	0	DEM	S
Polygon	254156.125	2486.851	6	22	312	0022	11	0	DEM	S
Polygon	143169.719	1572.433	7	5567	255	5567	27	0	DEM	S
Polygon	320224.375	2951.483	8	24	312	0024	11	0	DEM	S
Polygon	3774865.000	14039.302	9	31	312	0031	11	0	DEM	S
Polygon	259645.891	2737.230	10	3	255	0003	27	0	DEM	S
Polygon	478250.125	2852.757	11	521	312	0521	11	0	DFWELE	S
Polygon	350920.500	2676.894	12	1523	255	1523	27	0	X	X
Polygon	333192.938	3422.546	13	4	255	0004	27	0	DFWELE	S
Polygon	6188287.000	16656.520	14	36	312	0036	11	0	DEM	S
Polygon	503459.688	3115.288	15	5	11	0005	27	0	DEM	S
Polygon	475793.594	3367.156	16	1	12	0001	17	0	DFWELE	S
Polygon	43074.051	1037.302	17	1021	312	1021	11	0	X	I
Polygon	342784.438	2779.511	18	1509	343	1509	27	343018	NEWS	N
Polygon	180417.125	1874.505	19	1281	299	1281	17	299020	RAJALA A	P
Polygon	3358792.000	10430.341	20	510	299	0510	17	0	DEM	S
Polygon	5611359.000	20989.373	21	1521	255	1521	27	0	ACOE	F
Polygon	7846816.000	22851.705	22	2	299	0002	17	0	DEM	S
Polygon	257836.219	2746.538	23	3	299	0003	17	0	DFWELE	S
Polygon	441812.406	2921.590	24	6	11	0006	27	11001	DEM	S
Polygon	1972.131	428.604	25	459	12	0459	17	0	DFWELE	S
Polygon	337282.750	3089.394	26	491	12	0491	17	0	DFWELE	S
Polygon	425004.906	3474.944	27	7	11	0007	27	11001	DEM	S
Polygon	17897.381	580.299	28	460	12	0460	17	0	DFWELE	S
Polygon	41634.191	951.400	29	4	12	0004	17	12011	DFWELE	S
Polygon	89439.852	1390.440	30	511	299	0511	17	0	BROOKS CROSSING HA	P
Polygon	184086.766	2608.930	31	5	232	0005	17	0	M232	M
Polygon	23151.449	1087.350	32	722	232	0722	17	0	NRLT	N
Polygon	367029.625	2679.027	33	8	11	0008	27	11003	DFWELE	S
Polygon	124097.617	1963.496	34	6	232	0006	17	0	M232	M
Polygon	128232.641	1637.967	35	768	232	0768	17	232027	DFWELE	S
Polygon	48532.844	1055.150	36	7	232	0007	17	232039	M232	M
Polygon	158722.094	1923.034	37	6050	232	6050	17	0	X	P

c) Select the field "**Fee_Owner**" by clicking on it once. Click on **the "Sort Ascending**" button, or go to the **Field menu** and select "**Sort Ascending**". Notice that the field is not arranged alphabetically. Scroll down through the field, examining the records, until you see **DFWELE**.

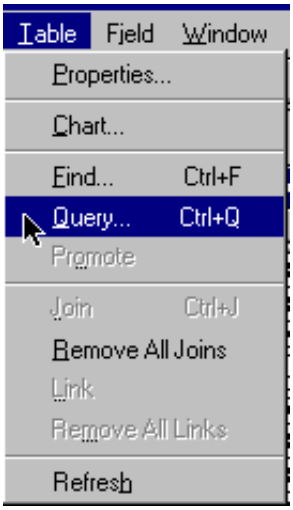


Note: According to the Metadata for the Theme "Openspace by Ownership", this field indicates the owner of the land. In this case it is the Division of Fisheries, Wildlife and Environmental Law Enforcement (DFWELE)

d) Close the Table.

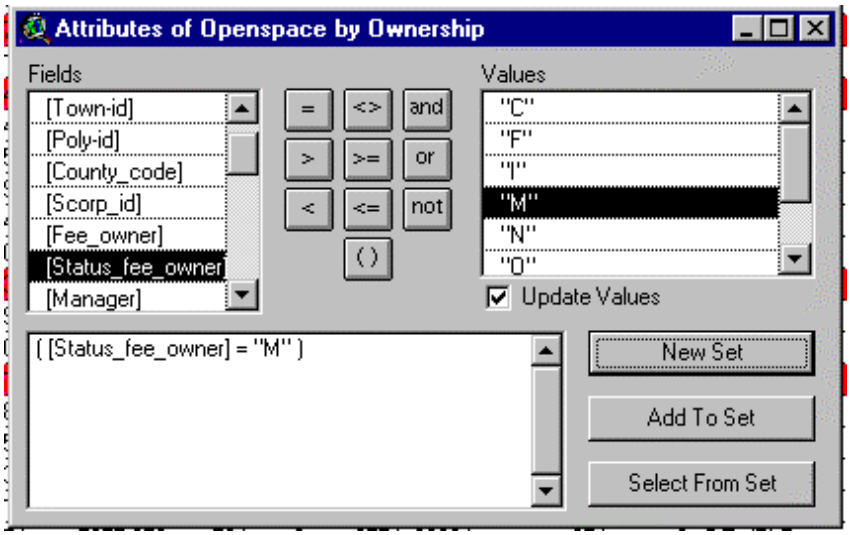
3. Querying a Theme's Database

a) With the Table open for the Theme "**Openspace by Ownership**" go to **the Table menu** and select "**Query**", or select the "**Query**" button. A smaller "**Ownership**" window appears.



Note: The Query process is a very important and powerful tool in ArcView and in the Data Viewer. It enables us to ask questions of the data by building a "Query Question".

b) We will ask the question: What openspace parcels are owned by Municipalities? In the smaller window, "**Attributes of Openspace by Ownership**", in the "**Fields**" list select by double clicking "**Status_fee_owner**". Then click once on the minus (=) sign. Double click on the "**m**" in the "**Values**" list.



Note: From the Theme's metadata, we know that "m" stands for municipality.

c) Notice how a sentence has been constructed in the box window. Click "**New Set**" and close the smaller Query window.

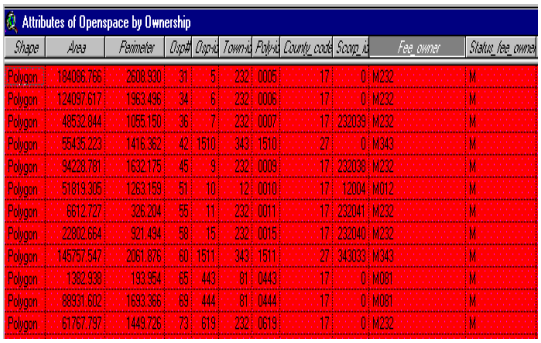
Attributes of Openspace by Ownership

Shape	Area	Perimeter	Dspt#	Dspid	Town-id	Poly-id	County_code	Scorp_id	Fee_owner	Status_fee_owne
Polygon	184086.766	2608.930	31	5	232	0005	17	0	M232	M
Polygon	23151.449	1087.350	32	722	232	0722	17	0	NRLT	N
Polygon	367029.625	2679.027	33	8	11	0008	27	11003	DFWELE	S
Polygon	124097.617	1963.496	34	6	232	0006	17	0	M232	M
Polygon	128232.641	1637.967	35	768	232	0768	17	232027	DFWELE	S
Polygon	48532.844	1055.150	36	7	232	0007	17	232039	M232	M
Polygon	158722.094	1923.034	37	6050	232	6050	17	0	X	P
Polygon	89453.555	4360.079	38	8	232	0008	17	232027	DFWELE	S
Polygon	141611.609	1714.803	39	6140	232	6140	17	0	X	P
Polygon	47888.824	877.064	40	1020	312	1020	11	0	X	I
Polygon	172965.500	1918.423	41	6141	232	6141	17	0	X	P
Polygon	55435.223	1416.362	42	1510	343	1510	27	0	M343	M
Polygon	201875.859	1916.558	43	6142	232	6142	17	0	X	P
Polygon	272149.750	2466.115	44	455	12	0455	17	0	DFWELE	S
Polygon	94228.781	1532.175	45	9	232	0009	17	232038	M232	M
Polygon	83701.578	1165.834	46	6143	232	6143	17	0	X	P

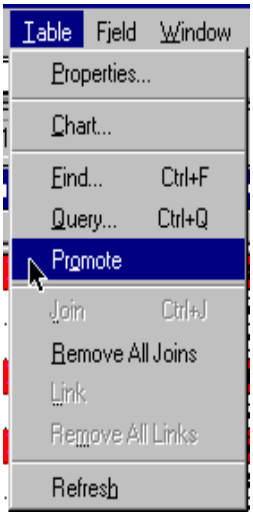
Selected Records

d) You will see some records have been selected and are displayed in the Theme's Table in a different color. All the parcels owned by a Municipality in Massachusetts have been selected.

e) Sometimes we may want to group all of the selected Table "**records**" together for easier viewing. To group the selected records, click on the "**Promote**" button, or go to the **Table menu** and select "**Promote**". All the records are moved to the top of the Table. Close the Table.



Selected Records
(Promoted to the Top)



f) In your current View you do not see any of the selected parcels. Because of our symbol colors and shading, we have made it impossible for the Viewer to display the selected records. In our next exercise we will correct this problem.

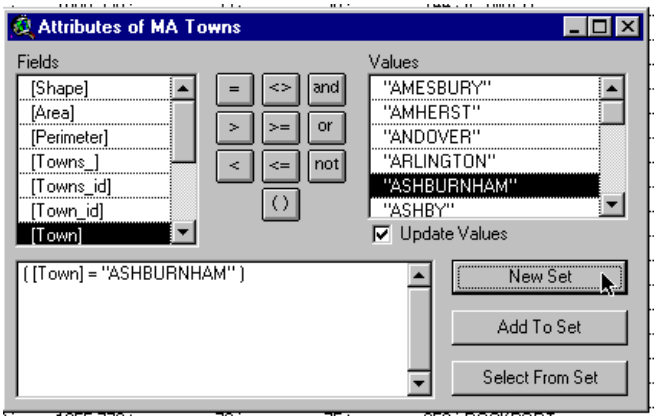
4. Practicing Querying (Challenge #1)

a) Lets assume we want to know how many land areas in **Your Town** are owned by **DEM (Department of Envronmental Management)**. First **activate** the "**Openspace by Ownership**" and in the Theme menu, select "clear selected features".

Note: Clearing the "selected features" allows for additional changes and creations. If selected features remains, some actions will only be done to these features. Sometimes this is desired, but in this Exercise it is not.

b) In the Table for "**Openspace by Ownership**" there were no fields listing a town by name. We need to find out the proper town code for **Your Town (Ashburnham** for this exercise) so we can build a Query.
c) Close the Table
d) **Activate** the Theme "**MA Towns**". In the **Theme menu**, select "**Table**". We will perform a **Query** on the **MA Towns Table**.
e) Select the "**Query**" button or go to the **Table menu** and select "**Query**". In the Query window build the following Query question and click **New Set**.

Town = Ashburnham
(Use Your Town's Name in place of Ashburnham)



Note: Remember to double click the field, single click the connecting symbol and double click the Value. If this process is not done correctly, you will get a "Syntax Error" message in your window when you click OK.

f) Use the "**Promote"** button to bring your selections to the top of the Table.
g) Read across the selected record for Your Town, and notice what its Town-Id number is. We will use this in our next step. Close the Table.

Attributes of MA Towns

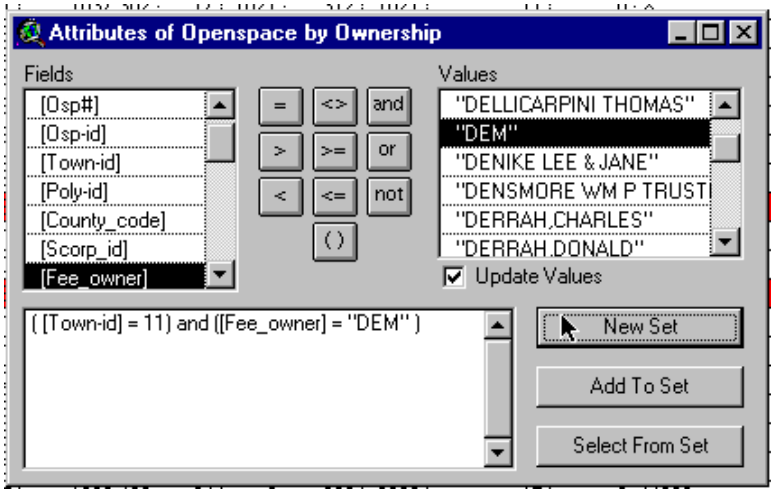
Shape	Area	Perimeter	Towns_	Towns_id	Town_id	Town	Fips_stco	Cod_mcd
Polygon	106187224.00	41875.410	57	56	11	ASHBURNHAM	25027	005
Polygon	41372808.000	33680.652	2	1	259	SALISBURY	25009	145
Polygon	35563040.000	26562.352	3	2	7	AMESBURY	25009	005

h) Make the Theme "**Openspace by Ownership**" active, and open its **Attribute Table**.

i) We have already determined from the Query on the **MA Towns** Theme Attribute Table that **Ashburnham's Town_id = 11**. What is your town's id? We will use this to build a Query to answer our original question. Which land parcels in Your Town are owned by the **DEM**?

j) Click on the "**Query**" button or in the **Table menu**. Build the query below:

Town-id = 11 and Fee_ownership = DEM
(Use your Town_id as the number)



k) click "**New Set**" and close the window. Use the "**Promote**" button or selection in the **Table menu**. Close the Table.

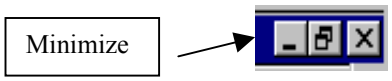
Shape	Area	Perimeter	Osp#	Osp-id	Town-id	Poly-id	County_code	Scorp_id	Fee_owner	Status_fee_owner	Manager	Status_manager	Other_1
Polygon	503459.688	3115.288	15	5	11	0005	27	0	DEM	S			
Polygon	475793.594	3367.156	16	1	12	0001	17	0	DFWELE	S			
Polygon	43074.051	1037.302	17	1021	312	1021	11	0	X	I			
Polygon	342784.438	2779.511	18	1509	343	1509	27	343018	NEWS	N			
Polygon	180417.125	1874.505	19	1281	299	1281	17	299020	RAJALA A	P			
Polygon	3358792.000	10430.341	20	510	299	0510	17	0	DEM	S			
Polygon	5611359.000	20989.373	21	1521	255	1521	27	0	ACOE	F			
Polygon	7846816.000	22851.705	22	2	299	0002	17	0	DEM	S			
Polygon	257836.219	2746.538	23	3	299	0003	17	0	DFWELE	S			
Polygon	441812.406	2921.590	24	6	11	0006	27	11001	DEM	S			
Polygon	1972.131	428.604	25	459	12	0459	17	0	DFWELE	S			
Polygon	337282.750	3089.394	26	491	12	0491	17	0	DFWELE	S			
Polygon	425004.906	3474.944	27	7	11	0007	27	11001	DEM	S			
Polygon	17897.381	580.299	28	460	12	0460	17	0	DFWELE	S			
Polygon	41634.191	951.400	29	4	12	0004	17	12011	DFWELE	S			

l) We should be able to see these selected parcels as red in our View window. But do we?

m) Remember when we added the Theme "**Openspace by Ownership**" to our window, we selected it form a list using the "**A**" button. In this list we selected

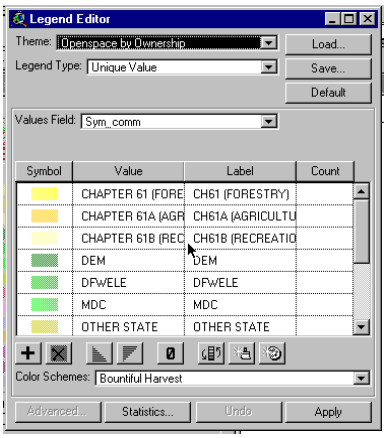
the **Transparent version**. Because the parcels are symbolized using a transparent quality, the selected color of **red** is hidden. We have two options, reload the Theme, but do not use a transparent version. This process will delete our table and the already selected features. A second option is to use the Theme's "**Legend Editor**" to change the symbol shadings. This will keep our already selected records protected.

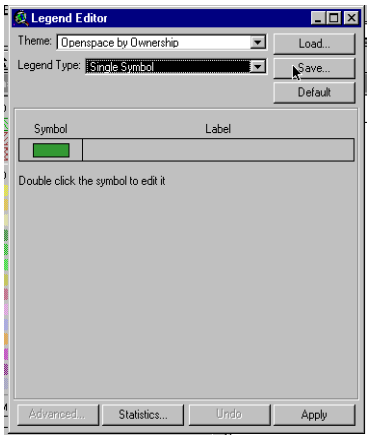
n) **Minimize** the Theme's Table by selecting the _ in the upper right hand corner of its window.



o) **Double click** within the area of the "**Openspace by Ownership**" theme and open the Theme's "**Legend Editor**".

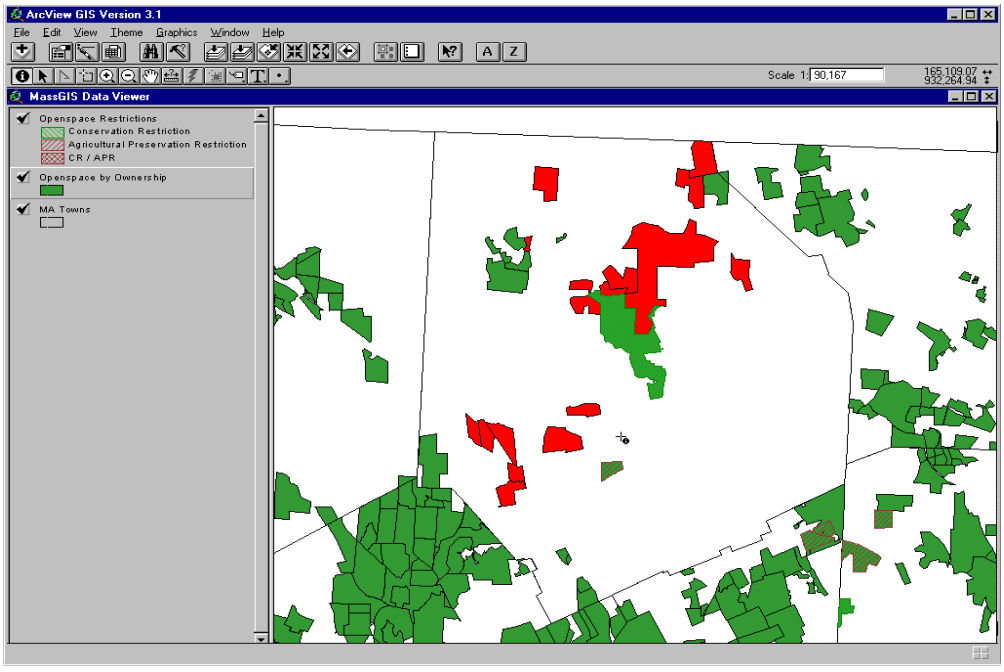
p) In the "**Legend Editor**" window change the "**legend type**" to "**Single Symbol**" and click "**Apply**". Close the "**Legend Editor**" window.

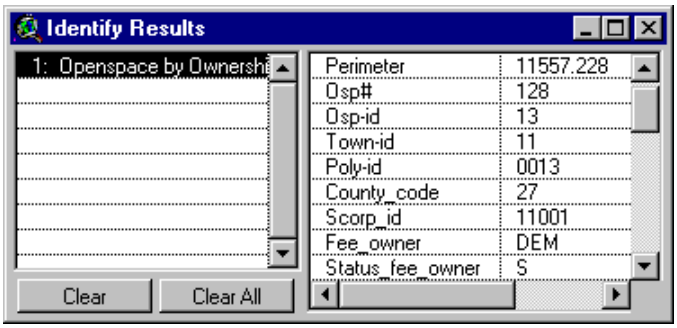




q) In the Data Viewer window we see all **Openspace parcels in Your Town** are one ownership color except the parcels shown in red. The red parcels are the **DEM parcels** we queried and selected out previously.

r) Use the "**Identification Tool**" to confirm that the red parcels are really owned by **DEM.**



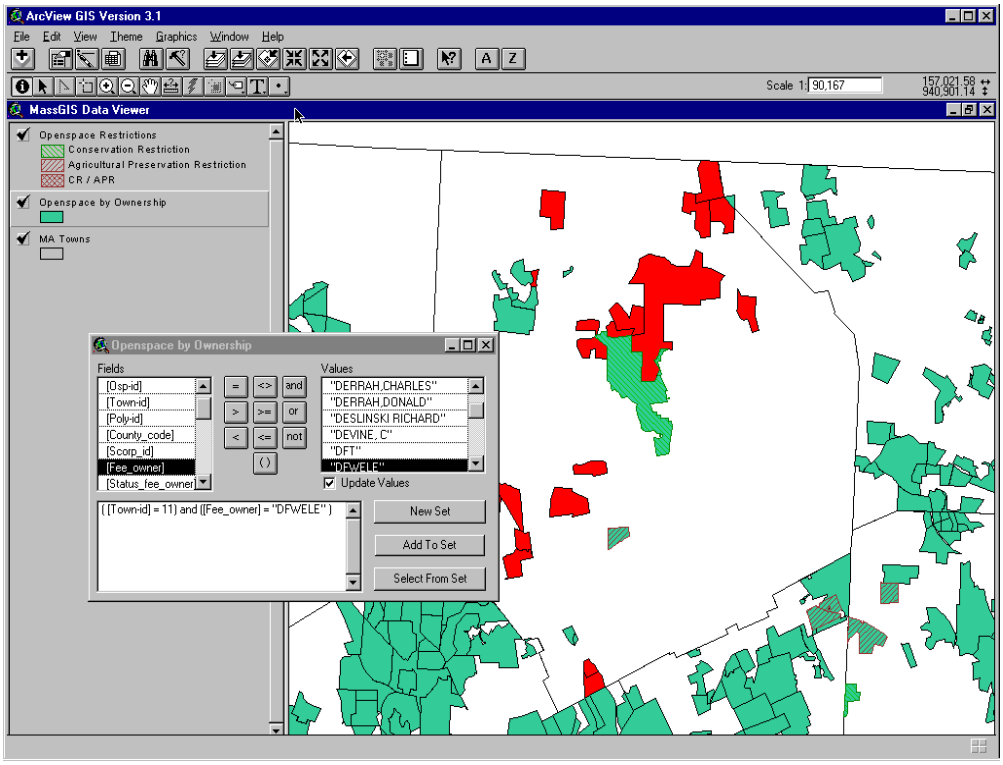


5. Practicing Querying (Challenge #2)

a) Lets assume that we have decided we want to add the parcels owned by the Division of Fisheries, Wildlife and Environmental Law Enforcement **(DFWELE)** to **Your Town View**. Open the Theme table **for "Openspace by Ownership"** and select the "**Query**" button.

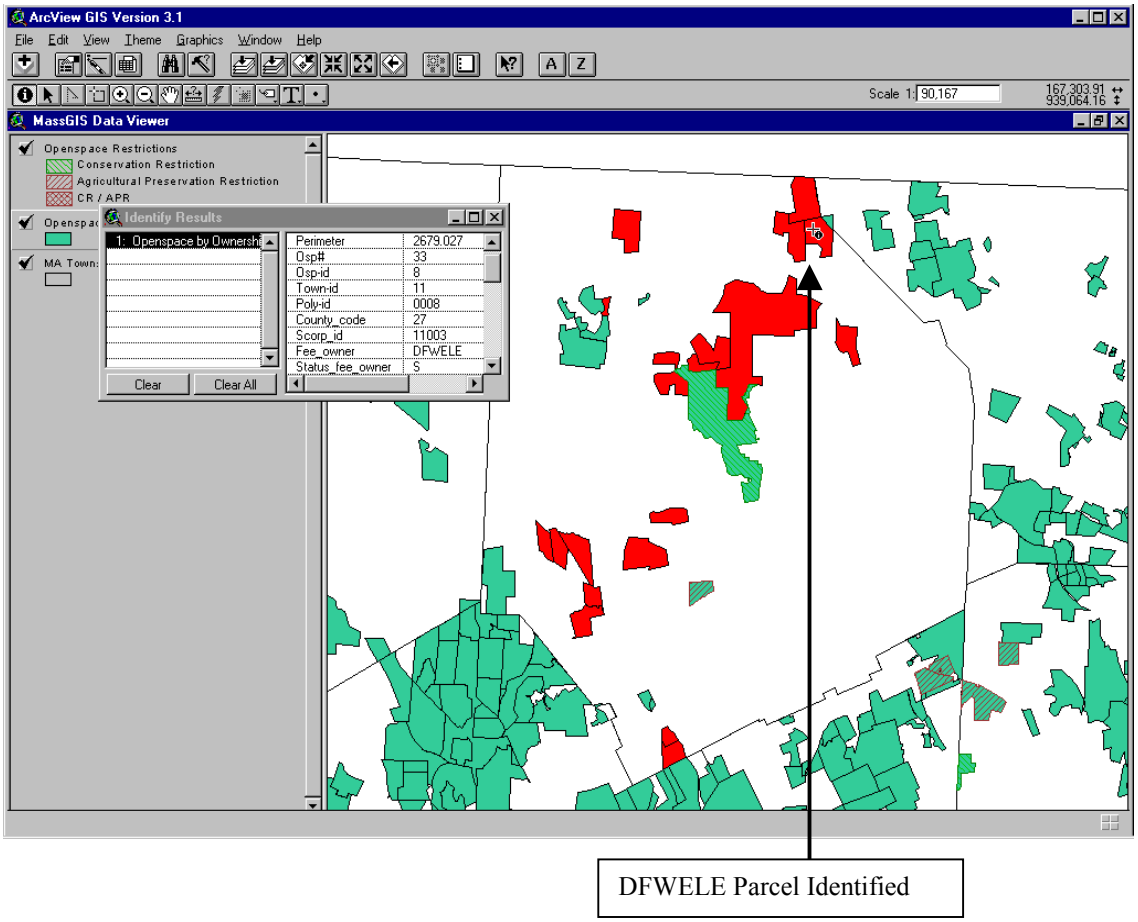
b) Build **a new Query** that is for **DFWELE**. When finished select "**Add to Set**". You may select the "**Promote**" button if you wish. **Close** the Table.

Town-Id = 11 and Fee_owner = DFWELE
(Use your Town's Id number)



DEM and DFWELE parcels selected

c) Examine **Your Town** View, additional red areas should appear. Use the "**Identification Tool"** to check if the newly added area is owned by **DFWELE**.



6. Deeper into Querying

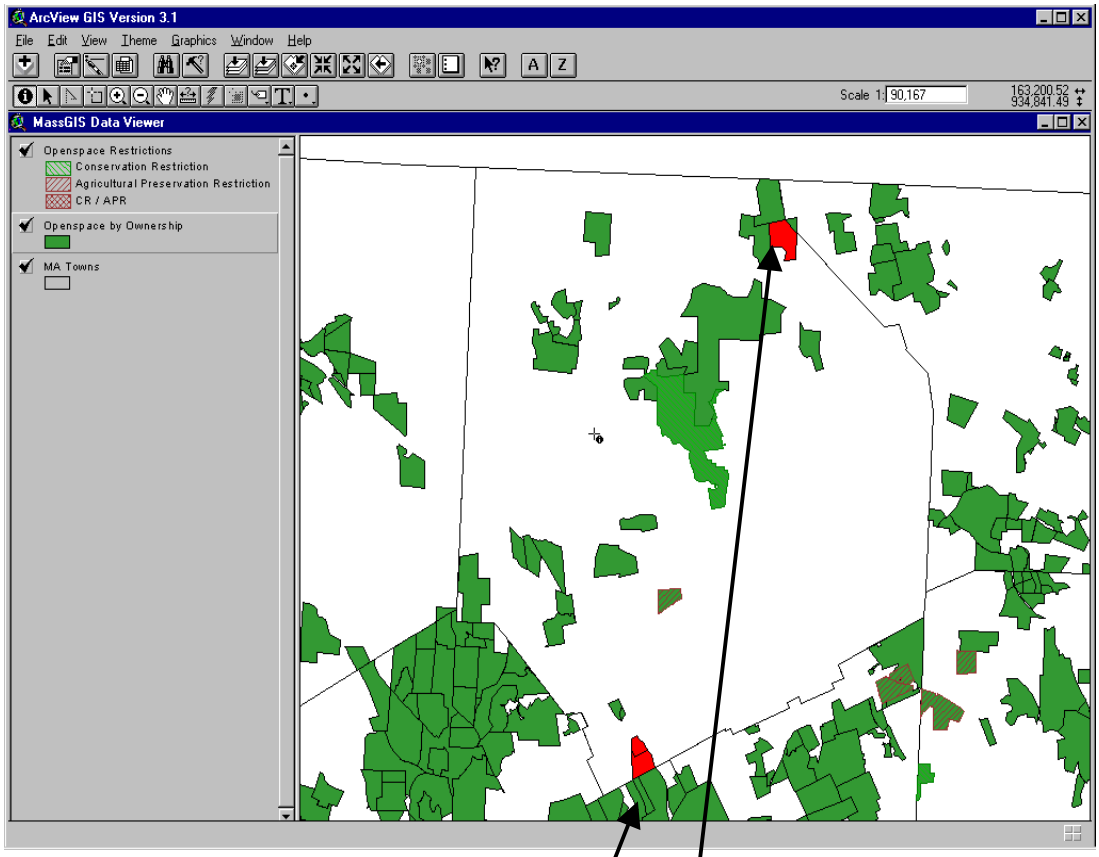
a) One more option remains in the "**Query**" window, "**Select from Set**". This option enables you to select one group of selected records to remain selected, and all other selected records are removed. Assume we now want to show only the **DFWEL** parcels in Your Town.

b) Open the Table for the "**Openspace by Ownership**" theme and build the following Query.

Town-Id = 11 and Fee_owner = DFWELE
(Use your Town's Id number)

c) Now select "**Select from Set**" and then click **OK**

d) Close the Table, and return to your View. You should see only the parcels that are owned by the **DFWELE**. All parcels owned by **DEM** have been removed from the View.



Note: Querying the Theme Data base is a powerful skill to learn. It is also one of the hardest. Always remember to **double click the "Field", single click the connecting symbol, and double click the "Values"** when doing a Query. Also remember in many cases you must repeat the fields if the question is complex. For example, If we asked: What parcels are owned by **DEM and DFWELE** in Your Town? We would construct our Query as:

Town-Id = 11 and Fee_ownership = DEM or Town-Id = 11 and Fee_ownership = DFWELE
(Use your Town's Id number)

The use of "or" tells the ArcView software and the Data Viewer to look for two different sets of records. If we connected the DEM request and the DFWELE request by "and", our program would look for only those parcels owned by both DEM and DFWELE in Your Town.

Activity #5 – Using Theme Tables and Querying the Data

Use the methods and procedures presented above to complete Theme Table examination and Data Queries using your own community. Try building some queries on your own and watch out for the "Syntax Error" message. Remember you can only build a Query using one activated Theme Table at a time. To complete Queries using two themes, it is first necessary to join Tables. We will discuss this later. For now: Keep It Simple